Appendix: code for problem 3

```r
M <- 1
e <- 0.0167
f <- function(E){M+e*sin(E)-E}
fp <- function(E){e*cos(E)-1}
fpp <- function(E){-e*sin(E)}
rs <- function(E){E - f(E)/fp(E)-(f(E)/fp(E))^2*fpp(E)/2/fp(E)}
steps <- 10
E <- 201.5
for (i in 1:steps){
  E[i+1] <- rs(E[i])
}
E
```

```
##  [1]  201.50000000000 -151.11117044374   66.19287234579    9.40183969184
##  [5]    1.12548396678    1.01417748183    1.01417908716    1.01417908716
##  [9]    1.01417908716    1.01417908716    1.01417908716
```

```r
error = abs(E-1.01417908716)
y = error[2:7]/error[1:6]
y
```

```
## [1] 7.58783582990e-01 4.28453860317e-01 1.28687155040e-01 1.32700743230e-02
## [5] 1.44227896130e-05 2.93620133439e-06
```
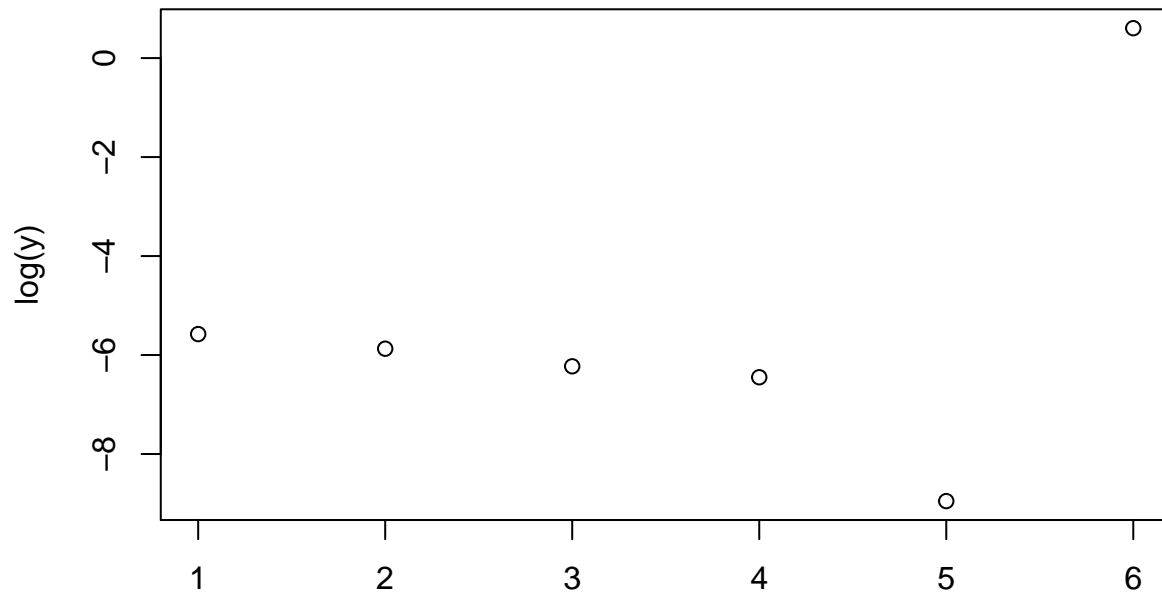
```r
plot(1:6,log(y))
```
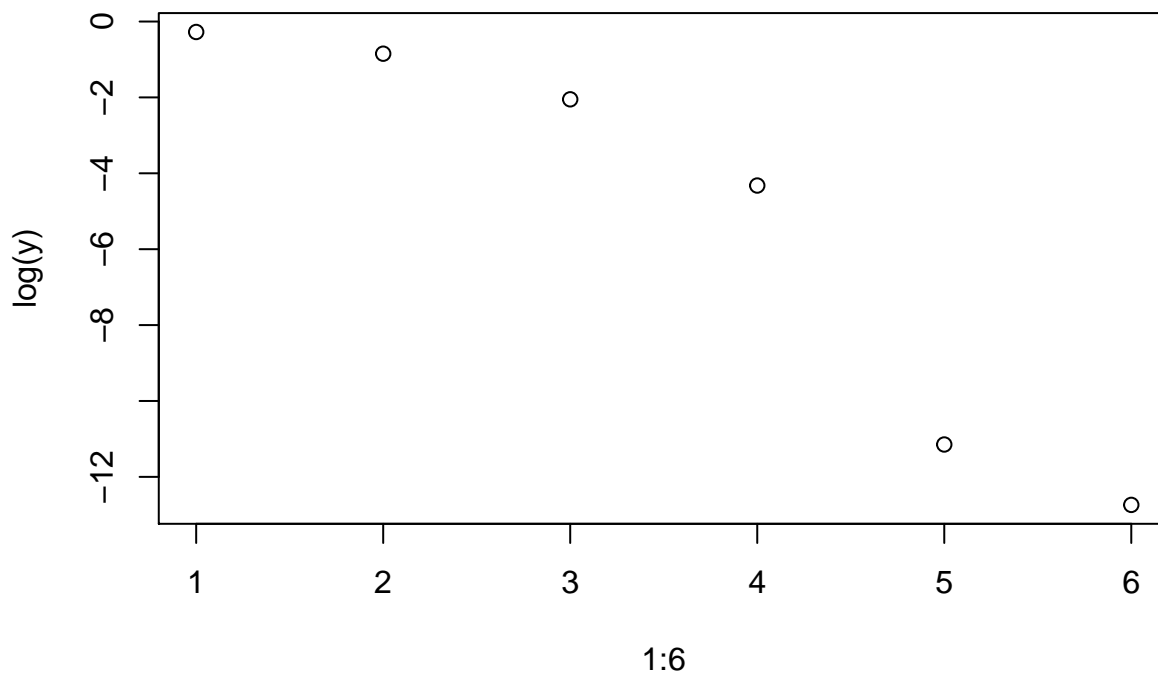


```r
y = error[2:7]/error[1:6]^2
y
```

```
## [1] 0.003784724423578 0.002816452758455 0.001974374578659 0.001582094811469
## [5] 0.000129579131321 1.829036443920129
```
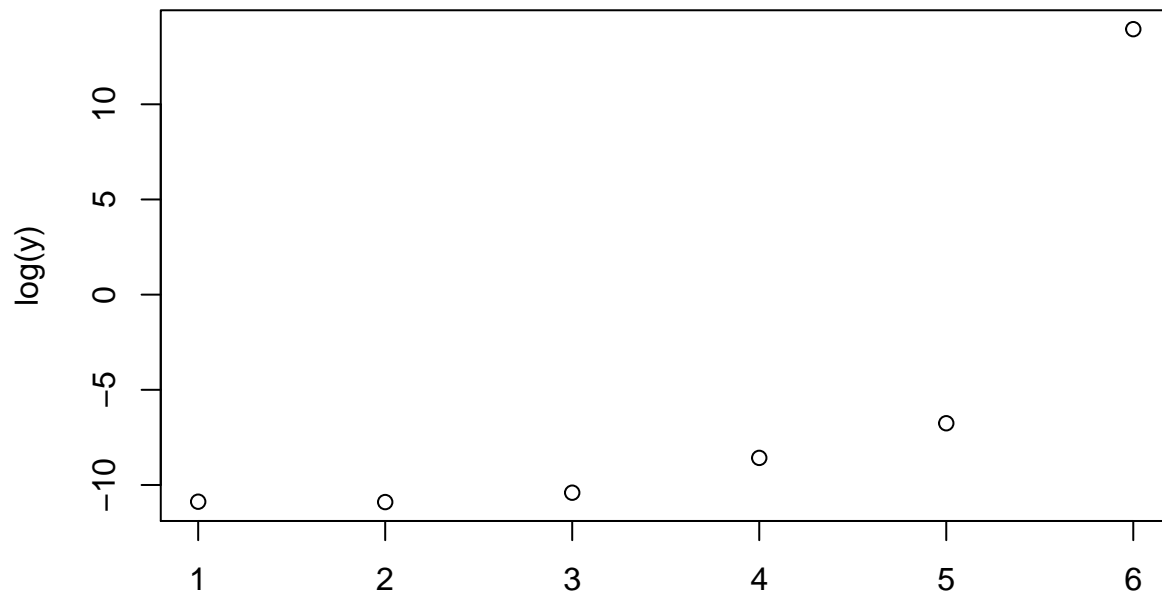
```r
plot(1:6,log(y))
```



```r
y = error[2:7]/error[1:6]^3
y
```

```
## [1] 1.88777660502e-05 1.85140265389e-05 3.02917177370e-05 1.88621701096e-04
## [5] 1.16418194568e-03 1.13935453745e+06
```

```r
plot(1:6,log(y))
```